

Early Childhood Mathematics

Weaving Mathematics into Daily Routines Set Up a Math/Science Center Math Manipulative and Activities

Math manipulatives are vital to any successful early childhood math/science center. Below are some easy items and activities to implement without spending a lot of money. Many of the materials on this list can be collected or purchased at inexpensive places like the Dollar Store.

1. Blocks of various shapes, sizes, and colors

All sizes and varieties are useful. Children can use these to count, build structures, compare, make patterns, fill things, etc. Put blocks in both your math/science center and your construction center.

2. Collections of loose objects

The objects can range from store-bought items, such as counting bears, blocks, shapes, and stickers, to found items, such as acorns, seeds, and buttons. Be careful that you do not use small items with very young children, as these can present a choking hazard.

Introduce these activities, in this order:

Counting: How Many?

Have children count a collection of one to five objects and tell you how many there are.

- Watch to be sure they say one word as they point to or pull aside one object. If they have trouble counting one item at a time, then they need a lot of practice to achieve the goal of “one-to-one correspondence.”
- Some children may need to recount before they can say confidently how many they have. They may not yet understand that the last word they say is the number of objects. When they no longer need to recount, they have achieved the goal of understanding “cardinality of number.”

Counting: How Many Now?

Have children count a collection of one to five objects and tell you how many there are. Then spread out the collection and ask the same question.

- Many children may need to recount before they understand that the number has not changed. When they no longer need to recount, they have achieved the goal of understanding “conservation of number.”

Comparing: Which Has More/Less?

Put two collections of one to five objects on the table. Ask the children to say which collection has *more*.

- Show the children how to match up items in each collection to compare.
- Do the same activity using the terms *fewer* and *less*, as well as the term *same*.

3. Paper or plastic cups of various sizes as well as stacking cups

Counting: Count into Cups

Label a set of same size cups with one to five dots and the corresponding numerals. Put these in your math/science center.

- Teach the children to count the dots to help them read the numerals.
- Show them how to put the correct number of objects in each cup.
- Children can also try putting the cups in order from 1 to 5 or in reverse order from 5 to 1.

(Note: A video example of this activity is in the interactive Daily Schedule. You can find this activity by clicking on *Explore Math Throughout the Day* in the Table of Contents.)

Measurement: Comparing Cups

- Have children fill cups of different sizes to see which holds more, less, and the same.

Patterning and Measurement: Cups in Order

- Have children put the stacking cups in order from small to large or large to small.
- Help them use comparison terms such as big, bigger, biggest or small, medium, large, etc.

4. Construction-paper shapes

Make a variety of circles, squares, triangles, rectangles, ovals, pentagons, etc., out of construction paper. You may want to laminate these shapes so they are durable. Put them in baggies and label the baggies with a picture and the name of each shape. Place the baggies and shapes in your creativity center, as well as in your math/science center.

Geometry: Shape Pictures

- Have children choose one shape from each baggie and make a picture with the shapes.
- Ask the children to tell you about their picture using the shape names (e.g., "I made a face. I used a square for the nose...")
- Next to each picture, write down what the child says about the picture.
- Make a class book.

Geometry: What's a Rectangle?

- Empty the rectangle baggie.
- Ask the children to compare all the different kinds of rectangles. (Some should be long and skinny with two long sides and two short sides. Others should be almost square.)
- Ask the children to count all the sides to see that all rectangles have four sides, but they don't all look exactly the same.

Geometry: What's a Triangle?

- Empty the triangle baggie.
- Ask the children to compare all the different kinds of triangles. (Some should have three sides the same length, some should have two sides the same length, and some should have no sides the same length. Be sure to include all kinds of triangles.)
- Ask the children to count all the sides to see that all triangles have three sides, but they don't all look exactly the same.

Geometry: Mixed Up Shapes

- Mix up the shapes from different baggies.
- Ask the children to find all the triangles and put them in the triangle baggie, and so on.

Geometry: "Eye" Spy

- Select a shape from a baggie.
- Give the children silly glasses (sunglasses, frames without the lens, etc.)
- Have the children play "eye" spy by looking around the room for the shape you've chosen.
- Repeat by having children select a new shape for each turn.

Geometry: Buried Shapes

- Fill a dishpan half full of sand.
- Bury some shapes in the sand.
- Have the children dig for the shapes.
- Have the children name the shapes as they discover them, or have them dig for a specific shape.

5. Stickers or stamps

For these activities you can buy sheets of stickers or have children use ink stamp sets. (To tie in geometry, buy stickers or stamps with two- and three-dimensional geometric shapes.)

Counting: Count and Match

- Label sheets of paper with one to five dots (or simple shapes) and write the corresponding numerals.
- Have children count and place the correct number of stickers or stamps on each of the sheets.
- As an extension activity, have the children put the pages in order from one to five.

Counting: Count and Say

- Put one to five stickers or stamps on pieces of paper.
- Have the children count the stickers or stamps and say how many there are.
- Help the children write the corresponding numeral.
- As an extension activity, have the children put the pages in order from one to five.

Patterning: Copy (or Extend) the Pattern

- Use stickers or stamps to make a pattern, such as apple/pear, apple/pear, etc.
- Have children copy the pattern using stickers or stamps on another sheet of paper.
- For a more advanced activity, have children extend the pattern or try more complicated patterns.

6. Wall charts and posters

Number line:

Nearly every early childhood classroom has a number line of some sort. Be sure that yours shows the number as well as the dots that correspond with that number. You can make your own or purchase one.

- Post the number line *low* on a wall so that children can easily see, count, point, and/or trace the dots and the written numerals.
- If the number line is at an accessible height, children can also use this chart any time they need a reminder of what the numbers mean.

Graphs:

You can make simple picture graphs with small groups of children. Make sure you give each child the opportunity to add to the graph.

- For example, post a chart with two sides. Label one side “boys” and the other “girls.”
- Have each child put a sticker for themselves on the chart. (Or, write their names on sentence strips and have the children place their names on the chart.)
- As a small group, talk about whether there are more, less, or the same number of boys and girls.

- Do the same activity by having the children vote about which ice cream flavor they prefer—chocolate or vanilla.
- Keep trying several activities with just two choices, and then add a third, and so on.

Here are some additional math manipulatives that are commercially available and wonderful to have in your classroom:

1. Pattern Blocks

These are small colored shape tiles that can be purchased separately or as part of curricular kits. Put these blocks in your math/science center and in your creativity center.

- Children can use these blocks to explore patterns, to sort, and to count.
- One nice aspect of these blocks is that smaller shapes can fit together to form larger shapes.
- There are also many commercially available activities that accompany these blocks.

2. Unifix Cubes

These are cubes of different colors that easily snap together. Put these blocks in your math/science center.

- Children can use these to count and make stacks of various sizes.
- They can also use these cubes to make repeating AB patterns as well as more complicated patterns.

(Note: A video example of children using Unifix Cubes is in the Center Time - Patterns example in the Interactive Daily Schedule activity. Click *Explore Math Throughout the Day* in the Table of Contents to access this activity.)

3. Geoboards

These are commercially available, plastic, square peg boards designed to be used with rubber bands. Children wrap the rubber bands around the pegs to form shapes.

- Children can use Geoboards to see how many kinds of shapes they can make, and then copy the shapes by drawing.
- They can also try to make as many different kinds of rectangles or triangles as they can.
- They can also make and compare two different shapes.

(Note: A video example of children using Geoboards is in the Center Time - Geometry example in the Interactive Daily Schedule activity. Click *Explore Math Throughout the Day* in the Table of Contents to access this activity.)